

Runtime randomization and perturbation for virtual machines.

JAVIER CABRERA ARTEAGA

Licentiate Thesis in [Research Subject - as it is in your ISP]
School of Information and Communication Technology
KTH Royal Institute of Technology
Stockholm, Sweden [2022]

TRITA-ICT XXXX:XX ISBN XXX-XXX-XXXX-X KTH School of Information and Communication Technology SE-164 40 Kista SWEDEN

Akademisk avhandling som med tillstånd av Kungl Tekniska högskolan framlägges till offentlig granskning för avläggande av licentiatexamen i [ämne/subject] [veckodag/weekday] den [dag/day] [månad/month] [år/2022] klockan [tid/time] i [sal/hall], Electrum, Kungl Tekniska högskolan, Kistagången 16, Kista.

© Javier Cabrera Arteaga, [month] [2022]

Tryck: Universitetsservice US AB

Abstract

Write your abstract here... $\textbf{Keywords:} \ \, \textbf{Keyword1}, \, \textbf{keyword2}, \, \dots$

Sammanfattning

Write your Swedish summary (popular description) here... $\bf Keywords : Keyword1, \, keyword2, \, ...$

Acknowledgements

Write your professional acknowledgements here...

Acknowledgements are used to thank all persons who have helped in carrying out the research and to the research organizations/institutions and/or companies for funding the research.

 $Name\ Surname,$ Place, Date

Contents

Contents						
Li	\mathbf{st} of	Figures	vii			
Li	st of	Tables	viii			
Li	\mathbf{st} of	Acronyms	ix			
1	1.1	Motivation	1 1 1			
2	1.2 Bac 2.1	Contributions	1 2 2			
3	Met 3.1 3.2	Corpora	4 4 5 6			
	3.3	3.2.2 Protocol	6 7 7 8			
	3.5	to enforce security?	9 10 10 11			
$\mathbf{A}_{]}$	ppen	ded papers	11			

List of Figures

2.1	1 CROW workflow to generate program variants. CROW takes C/C++				
	source codes or LLVM bitcodes to look for code blocks that can be				
	replaced by semantically equivalent code and generates program variants				
	by combining them.				

2

List of Tables

3.1	Corpora description. The table is composed by the name of the corpus,	
	the number of programs, the number of functions, the lines of code range	
	and the location of the corpus	5
3.2	CROW tweaking for variants generation. The table is composed by the	
	name of the corpus, the timeout parameter and the count of allowed	
	instructions during the synthesis process.	7

List of Acronyms

Wasm WebAssembly

DTW Dynamic Time Warping